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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,536	11/28/2003	Scott E. Axelrod	YOR92003-0618US1	1863

7590   08/06/2007

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ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
08/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 November 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-12</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-12</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>28 November 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

On page 12, line 12, it appears that the term "acoustic" is actually referring to –acoustic

features-- and should be corrected accordingly.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   **Claim 7** is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for

omitting essential steps, such omission amounting to a gap between the steps. See MPEP

§ 2172.01. The omitted steps are: determining a posterior probability of a hypothesized

linguistic unit given the extracted multitude of speech features *using a log-linear function*; and

using *the* posterior probability, determining a recognized output of unknown utterances. In other

words, in its current state, there is no connection *(necessary relationship)* between the second

and third method steps in claim 7.

Dependent claims 8-12 fail to overcome the 35 U.S.C. 112, second paragraph rejection

directed towards claim 7, and thus are also rejected for similar reasons.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   **Claims 1-12** are rejected under 35 U.S.C. 102(b) as being anticipated by Vergyri

("Integration of Multiple Knowledge Sources in Speech Recognition Using Minimum Error

Training," 2000).

With respect to **Claim 1**, Vergyri discloses:

A features extractor that extracts a multitude of speech features *(means for extracting*

multiple types of speech feature information, Pages 1, 13, 18-19, 52, and 98-99);

A log-linear function that receives the multitude of speech features to determine a

posterior probability of a hypothesized linguistic unit given the extracted multitude of speech

features *(log-linear modeling function means that determines a posterior probability of a word*

sequence given extracted speech features from multiple information sources, Pages 100-101);

and

A search device that consults the log-linear function to determine a recognized output of

unknown utterances (decoding means *performing speech recognition using the log-linear model,*

Pages 98, 104-109, 112; and word sequence output from a decoder, Fig. 1.1, Page 1).

With respect to **Claim 2**, Vergyri discloses:

The log linear function models the posterior probability using a log linear model *(log-linear sentence model, Page 100-101)*.

With respect to **Claim 3**, Vergyri further discloses:

The speech features comprise at least one of asynchronous, overlapping, and statistically non-independent speech features *(overlapping speech features, Page 18)*.

With respect to **Claim 4**, Vergyri further discloses:

At least one of the speech features extracted is derived from incomplete data *(use of a log-linear model for sparse or insufficient speech data, Page 14)*.

With respect to **Claim 5**, Vergyri further discloses:

The system of claim 1, further comprising a loopback *(iterative processing (loopback) for error minimization (i.e., likelihood optimization), Pages 24-29 and 106-109)*.

With respect to **Claim 6**, Vergyri further discloses:

The features are extracted using direct matching between test data and training data *(extracted feature measurements resulting from speech recognition matching, Pages 9 and 109-126)*.

Claims 7-12 contain subject matter similar to Claims 1-6, and thus, are rejected for the same reasons.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Berger et al *(U.S. Patent: 6,304,841)*- discloses a speech recognition method using an

exponential model.

Beyerlein *(U.S. Patent: 6,456,969)*- discloses a speech recognition method utilizing a

log-linear model.

Gao et al *(U.S. Patent: 7,054,810)*- discloses a speech recognition method for optimally

combining acoustic and language models/features.

Schramm et al (U.S. Patent Application Publication: 2003/0023438)- discloses a speech

recognition system using discriminative model combination.

Byrne et al *("Towards Language Independent Acoustic Modeling," 1999)*- discloses a

speech recognition system using a log-linear function-based discriminative model combination.

Shimodaria *(A New Criterion for Selecting models from Partially Observed Data,"*

1994)- discloses a method for model selection for partially observed data using a log-linear

model.

Kirchoff *("Combining Articulatory and Acoustic Information for Speech Recognition in*

Noisy and Reverberant Environments," 1998)- discloses a method for speech recognition that

utilizes multiple feature types.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632.

The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
7/30/2007